

# HEADACHE



# ILO's

- Define headache
- Compare primary and secondary headache
- Explain the mechanisms of primary headache
- Describe secondary headache

# Case scenario 1

A 29-year-old woman comes to the office due to frequent episodes of headache. She has moderate to severe, left-sided: throbbing pain associated with nausea and occasional vomiting.

Her headache is often preceded by a tingling sensation in the right hand that gradually involves the right arm and face.

She feels irritable while experiencing the headaches. The pain typically improves following several hours of rest in a dark and quiet room.

Vital signs are within normal limits and physical examination is normal.

# Clinical reasoning

A 29-year-old lady presents with the recurrent attacks of:

- Unilateral throbbing pain
- Preceded by a tingling sensation in the right hand
- Associated with photophobia, phonophobia, nausea and occasional vomiting
- Normal physical examination



**This is consistent with migraine headache**

## Case scenario 2

A 34-year-old man presents to his internist for evaluation of severe pain above and behind his right eye.

The pain began a few days ago and is intermittent. It occurs several times a day, usually lasting for 30–60 minutes, and often awakens him at night.

The pain is associated with ipsilateral tearing, conjunctival injection, and nasal congestion.

On exam, he has right-sided periorbital edema and mild ptosis.

He reports having similar symptoms 2 years ago and is concerned because that episode lasted for several weeks.

# Case scenario

A 44-year-old woman with a history of hypertension presents to her physician with a severe headache.

She said that she frequently experience attacks of headache but this is the most painful headache she has ever experienced.

The headache began this morning while she was eating breakfast. Since then she has had two episodes of vomiting but denies abdominal pain or nausea. She preferred to stay in dark quiet room.

She denies any traumatic events.

Physical examination is normal apart from neck stiffness.

# Definition:

Headaches are a type of pain referred to the surface of the head from deep head structures

## Types

# MIGRAINE

- ✓ It may occur secondary to prolonged tension or emotions.
- ✓ The headache is sometimes preceded by aura = visual disturbances or sensory hallucination (30 minute to 1 hour before the headache starts)
- ✓ The pain is pulsatile and accompanied by other symptoms such as nausea, vomiting, blurred vision, and

## TYPICAL MIGRAINE HEADACHE SYMPTOMS

A headache, which begins as a dull ache and transforms into throbbing pain



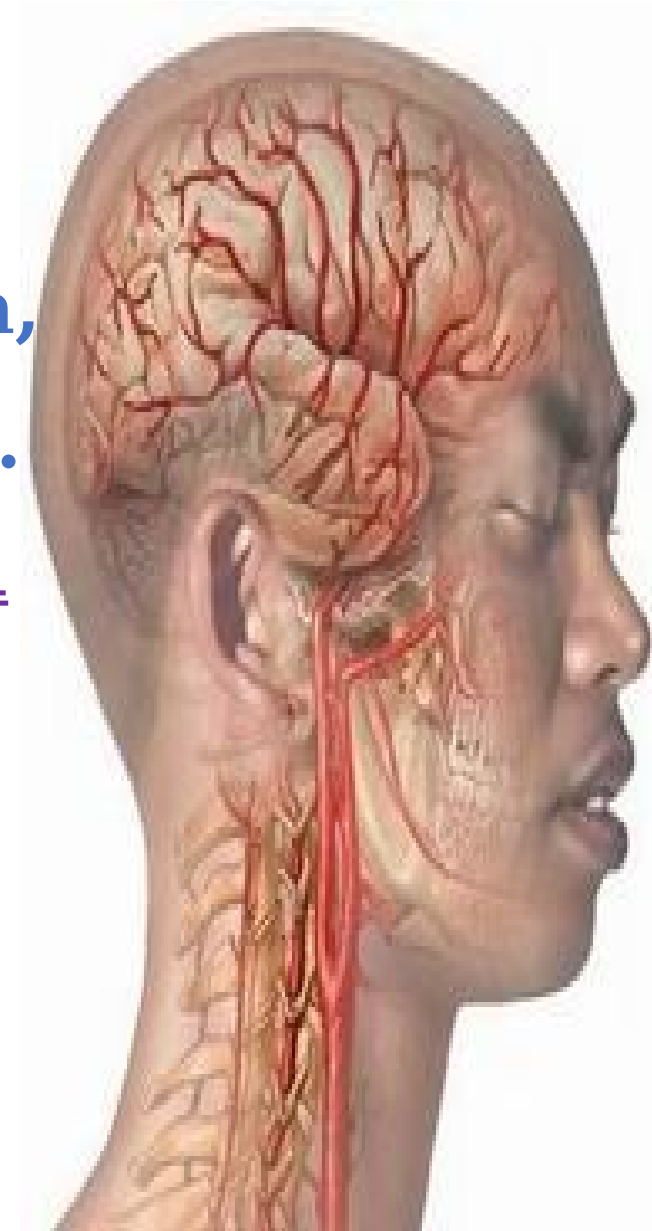


# MIGRAINE

✓ Mechanism: most likely it is caused by V.C. of the cerebral arteries, which results in ischemia, and this is followed by intense V.D.

✓ Migraines are often triggered by:

- Food items: red wine, chocolate, and aged cheeses.
- For women, a hormonal connection : the menstrual cycle, with use of



Blood vessel abnormalities are a component of vascular headaches such as migraines and cluster headaches

# TENSION-TYPE HEADACHE

## a) Tension-type headaches:

- ✓ It is the commonest type of 1ry headache.
- ✓ The typical tension-type headache is described as a tightening around the head and neck, and an accompanying dull ache.

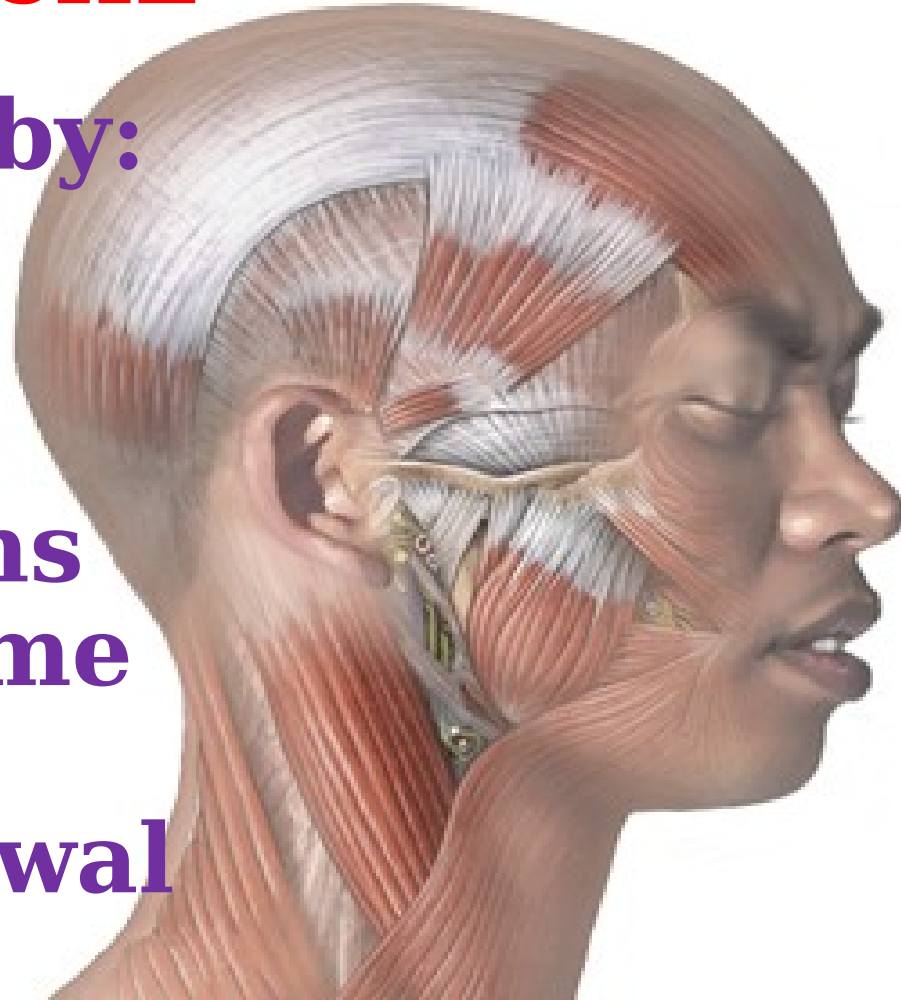
Possible areas of pain:  
upper back and neck,  
base of head,  
the ears,  
above the ears,  
the jaw,  
above the eyes



# TENSION-TYPE HEADACHE

It may be caused by:

- stress
- overexertion
- loud noise
- sleep deprivations
- Irregular mealtime
- Eyestrain
- Caffeine withdrawal
- Dehydration



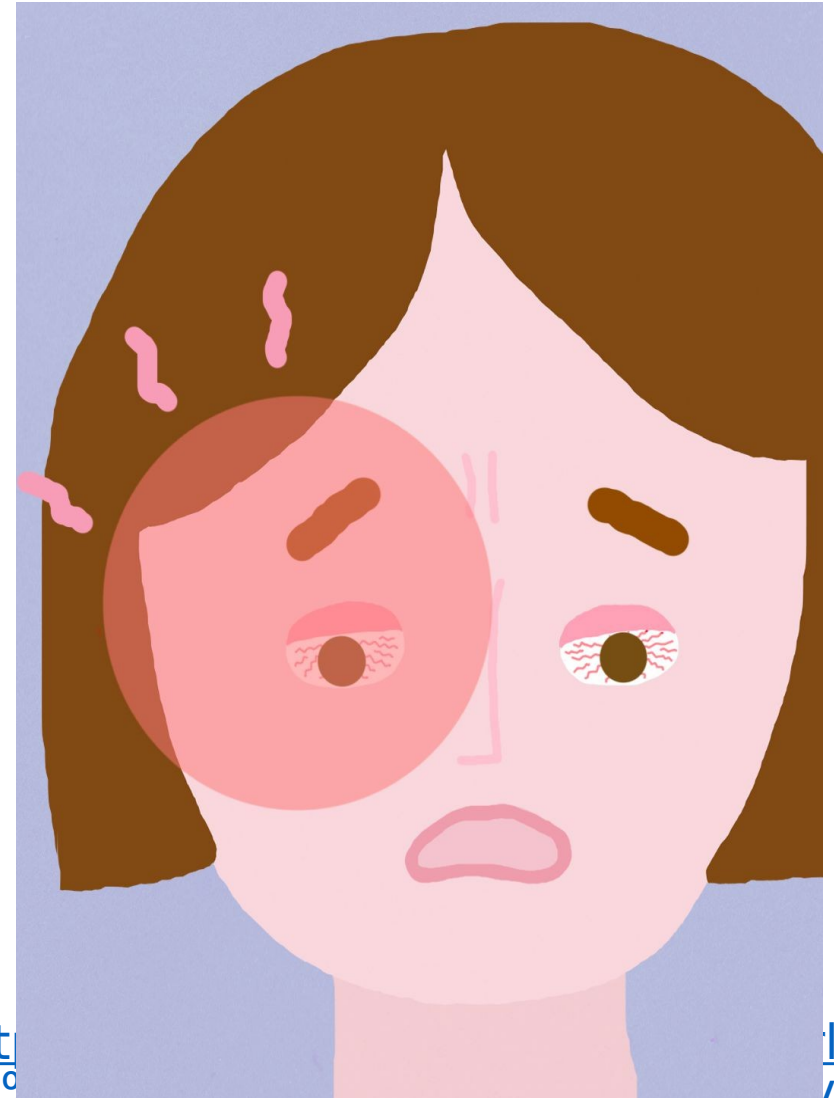
Muscle tension  
in the face, neck,  
and shoulders  
may cause  
tension  
headache

ADAM

[https://www.google.com.eg/url?sa=i&source=images&cd=&ved=2ahUKEwiOpKeJqr3IAhXOJVAKHfTWAPAQjRx6BAGBEAQ&url=https%3A%2F%2Fmedlineplus.gov%2Fency%2Farticle%2F000797.htm&psig=AOvVaw1jphjXey3b3R1PA\\_yKueID&ust=](https://www.google.com.eg/url?sa=i&source=images&cd=&ved=2ahUKEwiOpKeJqr3IAhXOJVAKHfTWAPAQjRx6BAGBEAQ&url=https%3A%2F%2Fmedlineplus.gov%2Fency%2Farticle%2F000797.htm&psig=AOvVaw1jphjXey3b3R1PA_yKueID&ust=)

# CLUSTER HEADACHES

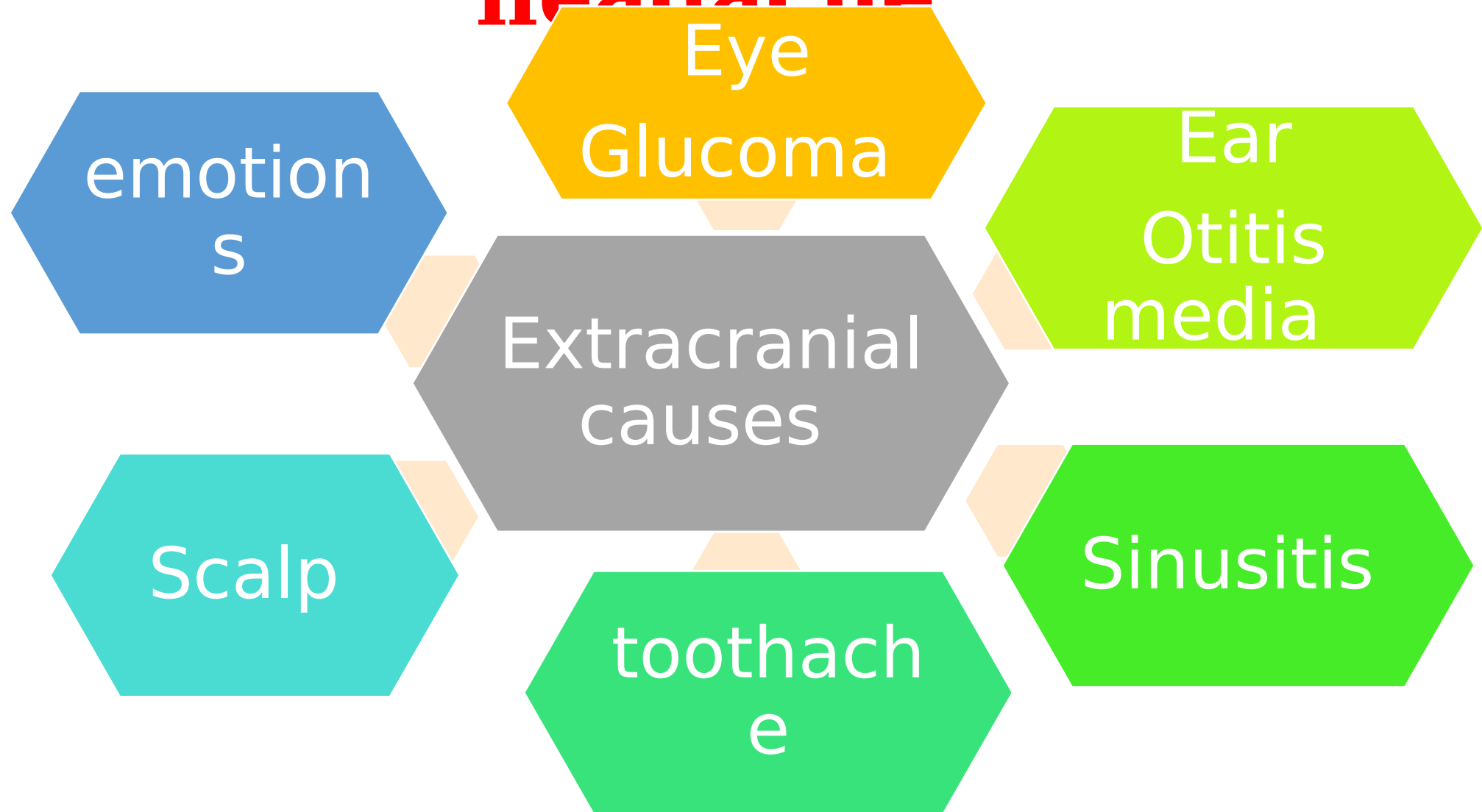
- ✓ It is severe, stabbing pain centers around one eye (periorbital), with ipsilateral eye lacrimation and nasal congestion.
- ✓ The headache lasts from 15 minutes to 4 hours and may recur several times in a day for weeks.



# Secondary Headache

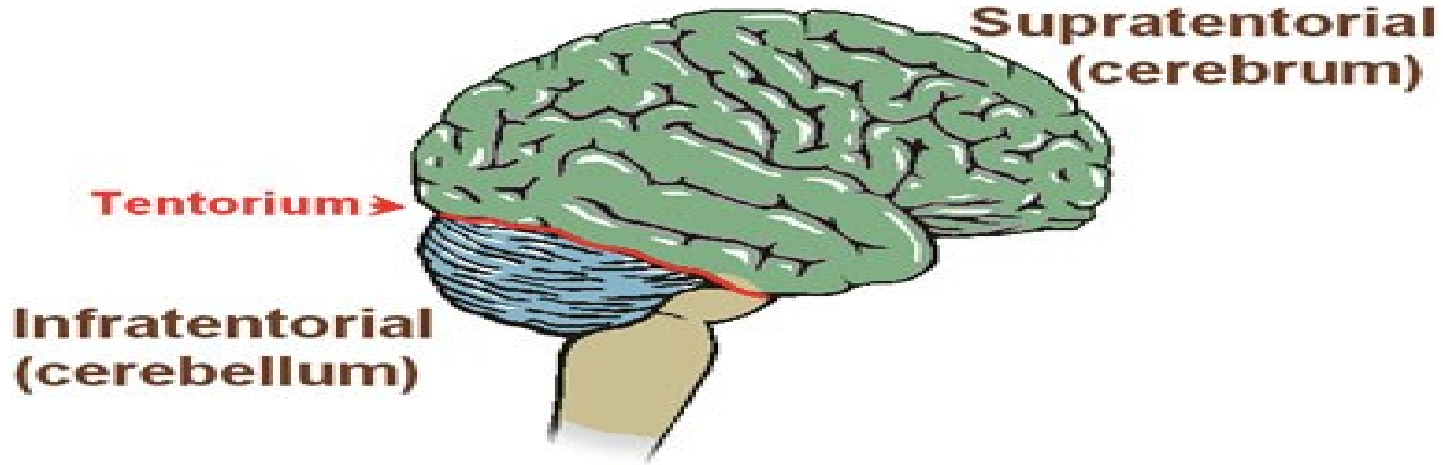
- ✓ Headache result from other
- ✓ Brain tissue itself has no sensitivity to pain disorders.
- ✓ Pain-sensitive structures in the head include :
  - a) Periosteum of skull
  - b) Meninges and tentorium
  - c) Blood vessel walls especially the middle cerebral artery and venous sinuses.
  - d) scalp subcutaneous tissue and neck muscles.
  - e) Eyes, Ears, teeth and sinuses

# Extracranial causes of secondary headache

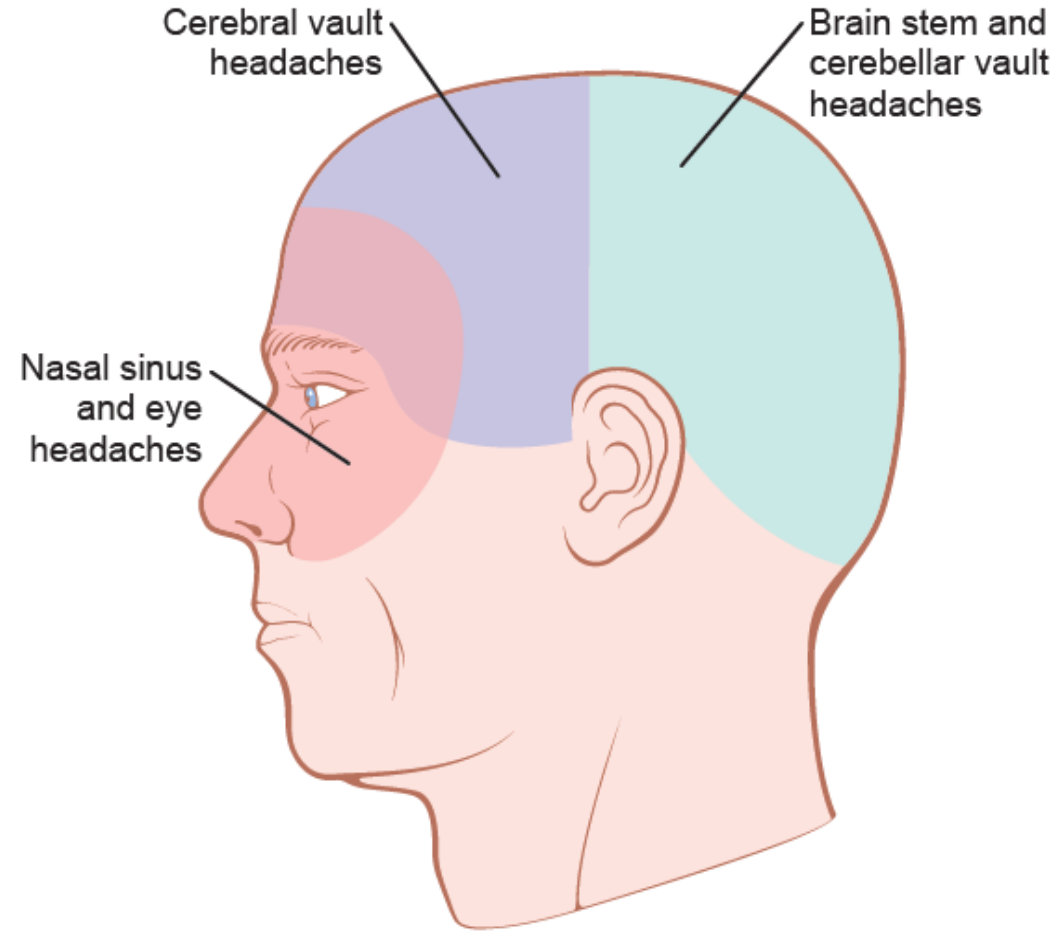


# Intracranial causes of secondary

## The Tentorium Cerebelli



- Stimulation of pain receptors above the tentorium, cause pain in the front half of the head
- Stimulation of pain receptors from below the tentorium causes pain in scalp above, behind, and slightly below the ear =



# Mechanisms of intracranial headache



Meningeal irritation

- Inflammation
- Stretch
- Irritation by toxins

Lowering of CSF

- 20 ml
- Supine position

Distension of arteries

- Fever
- Lowered CSF
- Hypertension



# Case scenario 1

A 29-year-old woman comes to the office due to frequent episodes of headache. She has moderate to severe, left-sided: throbbing pain associated with nausea and occasional vomiting.

Her headache is often preceded by a tingling sensation in the right hand that gradually involves the right arm and face.

She feels irritable while experiencing the headaches. The pain typically improves following several hours of rest in a dark and quiet room.

Vital signs are within normal limits and physical examination is normal.

# Question

**Which of the following is the most likely underlying cause?**

- A. Cluster headache
- B. Giant cell arteritis
- C. Migraine
- D. Tension headache
- E. Transient ischemic attack

# Clinical reasoning

A 29-year-old lady presents with the recurrent attacks of:

- Unilateral throbbing pain
- Preceded by a tingling sensation in the right hand
- Associated with photophobia, phonophobia, nausea and occasional vomiting
- Normal physical examination



**This is consistent with migraine headache**

## Case scenario 2

A 34-year-old man presents to his internist for evaluation of severe pain above and behind his right eye.

The pain began a few days ago and is intermittent. It occurs several times a day, usually lasting for 30–60 minutes, and often awakens him at night.

The pain is associated with ipsilateral tearing, conjunctival injection, and nasal congestion.

On exam, he has right-sided periorbital edema and mild ptosis.

He reports having similar symptoms 2 years ago and is concerned because that episode lasted for several weeks.

# Question

**Which of the following is the most likely underlying cause?**

- A. Chronic subdural hematoma
- B. Cluster headache
- C. Giant cell arteritis
- D. Migraine
- E. Tension headache

# Clinical reasoning

A 34-year-old man presents with the recurrent attacks of:

- Unilateral retro orbital pain.
- Ipsilateral tearing, conjunctival injection, and nasal congestion.
- Ipsilateral periorbital edema and mild ptosis.
- Occurring in clusters daily for 2 weeks

**This is consistent with cluster headache**



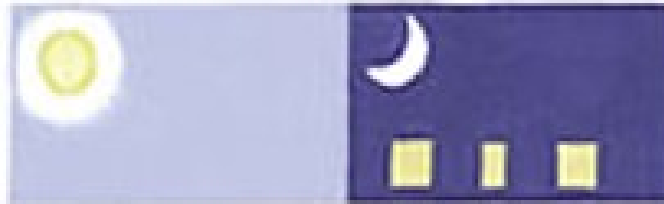
# Cluster headache: Clinical features

## Cluster headache

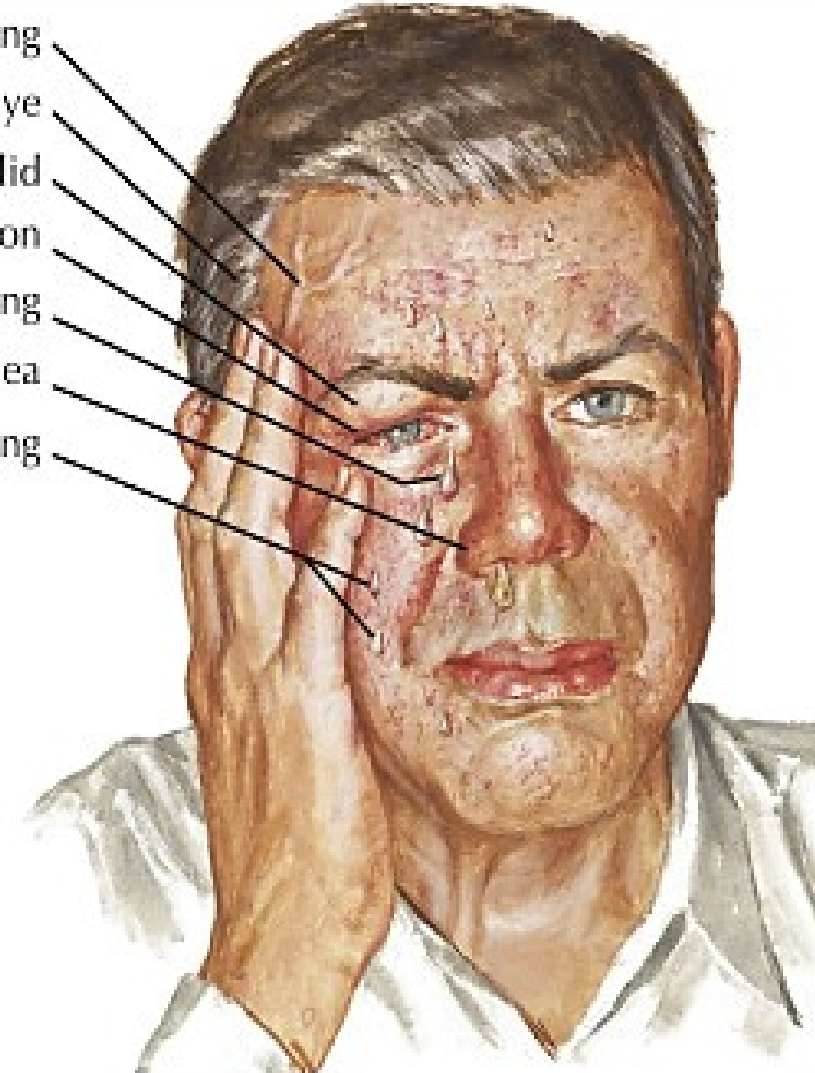


Large, strong, muscular man typical patient.  
Face may have peau d'orange skin, telangiectasis.

- Temporal artery bulging and pulsating
- Severe headache, pain behind eye
- Unilateral ptosis, swelling, and redness of eyelid
- Miosis, conjunctival injection
- Tearing
- Nasal congestion, rhinorrhea
- Flushing of side of face, sweating



Attacks typically nocturnal; average frequency 1-3 in 24 hours, lasting 15 minutes-3 hours





# Tension headache: Clinical features



Intermittent, recurrent, or constant head pain, often in forehead, temples, or back of head and neck; commonly described as "bandlike," "tightness," or "viselike"

Soreness of scalp; pain on combing hair

Temporal tightness or pressure

Bandlike constriction

Occipital tension

Rigidity of neck

Pressure on contracted muscle may augment pain.



Sleep disturbances common; diurnal incidence: headache occurs most often between 4 and 8 AM and 4 and 8 PM



Psychogenic factors: emotional conflict and depression often seen in chronic headache

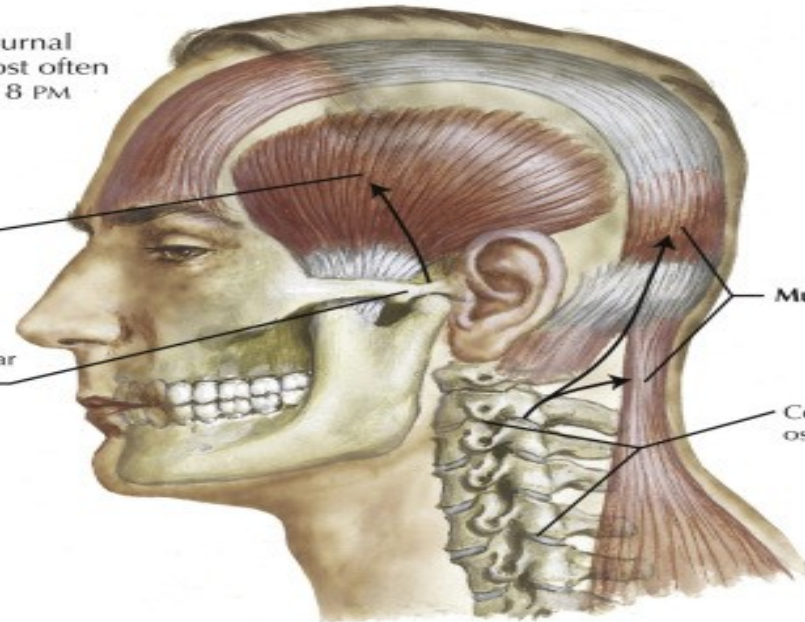


Muscle spasm

Temporomandibular joint dysfunction

Muscle spasm

Cervical spine osteoarthritis



Local trigger factors of muscle contraction headache



# Case scenario

A 44-year-old woman with a history of hypertension presents to her physician with a severe headache.

She said that she frequently experience attacks of headache but this is the most painful headache she has ever experienced.

The headache began this morning while she was eating breakfast. Since then she has had two episodes of vomiting but denies abdominal pain or nausea. She preferred to stay in dark quiet room.

She denies any traumatic events.

Physical examination is normal apart from neck stiffness.

# Question

**Which of the following is the most likely underlying cause?**

- A. Cluster headache
- B. Giant cell arteritis
- C. Migraine
- D. Subarachnoid hemorrhage
- E. Tension headache

# Clinical reasoning

A 44-year-old hypertensive woman presents with:

- Severe persistent headache
- Photophobia
- Neck rigidity



**This is suggestive of subarachnoid hemoarrhage**

# Red flags in patients presenting with headache

- Severe unremitting headache
- Fever
- Focal neurological deficits
- Seizures
- Impaired consciousness
- Signs of increased ICP (e.g., loss of consciousness, vomiting, bradycardia)
- Signs of meningism: neck rigidity, photophobia
- Psychiatric symptoms
- Eye pain





**Which of the following is a pain sensitive structures of the head and neck**

- a. Skull bone
- b. Meninges
- c. Brain tissues
- d. Brain ventricles

**b**



**Headache which occurs secondary to prolonged tension, accompanied by nausea, vomiting & blurred vision, & which can be triggered by food items, such as chocolate or menstrual period is which one of the following?**

- a. Tension headache.
- b. Migraine. **b**
- c. Cluster headache.
- d. Secondary headache



**Primary headaches may result from which one of the following**

- a. Contraction of the muscles of the scalp,**
- b. Brain swelling that stretches the brain's coverings.**
- c. Sinus inflammation is a common cause of headache.**
- d. Dilation of intracranial blood vessels**

## SUGGESTED TEXTBOOKS



1. Guyton and Hall textbook of medical physiology, thirteenth edition 2016, Elsevier
2. Ganong's Review of Medical Physiology, twenty-fifth edition 2016, McGraw-Hill Education



